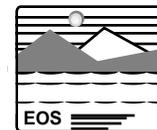


**EOSDIS**



**EOSDIS STATUS**

**PRESENTATION TO THE  
MODIS SCIENCE TEAM MEETING**

**MAY 15, 1997**

**Rick Obenschain  
301-614-5048**

# EOSDIS

# Functional Architecture



Flight Operations

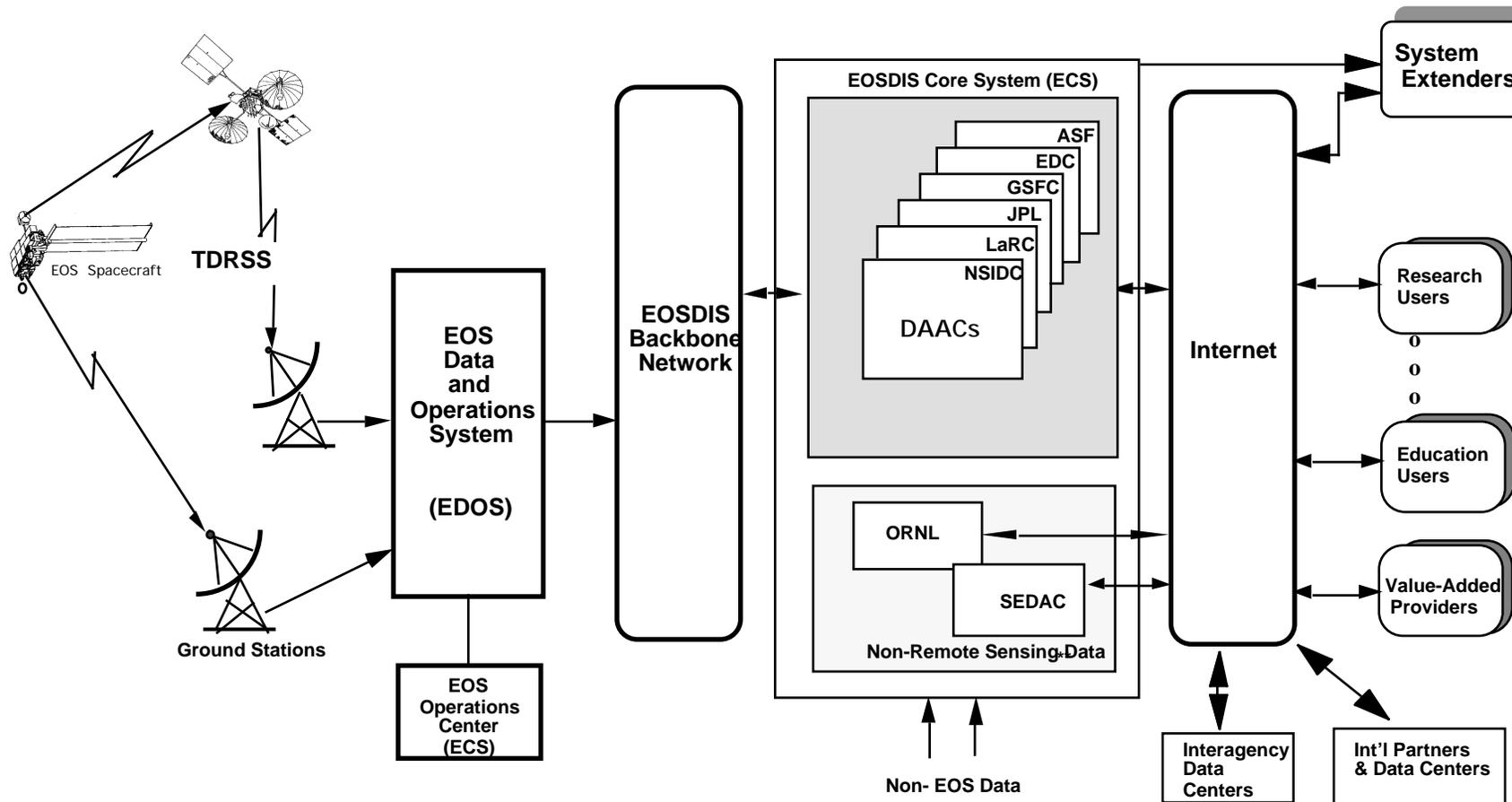
Data Acquisition

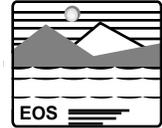
Data Capture, Initial Processing, Backup Archive

Data Transport to DAACs

Science Data Processing, Info Mgmt, & Distribution

Distribution, Access, Interoperability, Reuse



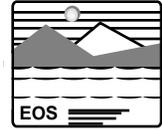


## STATUS

- Flight Operations Segment (FOS): Release A has been delivered, Release B is mid-way through integration
- EOS Data and Operations System (EDOS): Version 3 has been delivered
- Ground Stations: One set of equipment is in route to Norway; the other set (for Alaska) is undergoing factory acceptance testing
- Networks: IST connectivity is in place

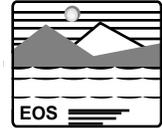
**EOSDIS**

**MISSION SYSTEMS**



## ACCOMPLISHMENTS

- FOS: Installed ISTs at MODIS, CERES and MISR sites; completed Release A IST useability testing with MODIS Instrument Operations Team
- EDOS: Tested low-rate data interfaces with AM-1 spacecraft via TDRSS
- Ground Stations: Conducted Operations Concept Review
- Networks: ASTER/JPL T1 link is operational

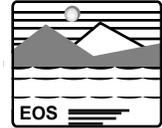


## NEAR TERM ACTIVITIES

- FOS: Support EOC Compatability Test #2 with AM-1 spacecraft in July using FOS Release B--will exercise CCSDS COP protocols between ground and spacecraft
- EDOS: Support EOC Compatability Test #2 with AM-1 spacecraft in July using EDOS Version 3; Discussing MODIS data delivery to NOAA for weather applications
- Ground Stations: Install equipment at Alaska in June; Install equipment at Norway in July; Begin procurement of commercial services for ground station support in PM-1 era
- Networks: Complete Inter-DAAC EBnet connectivity by July

**EOSDIS**

**MISSION SYSTEMS**



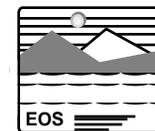
## CHALLENGES

- Finding adequate time with AM-1 spacecraft and instruments to thoroughly test operational interfaces

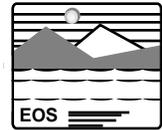
## OVERALL ASSESSMENT

- All EOSDIS Mission System elements are on schedule, with no major risks/obstacles identified for launch readiness

**EOSDIS**



# EOSDIS CORE SYSTEM (ECS) STATUS



- **ECS Science Information System - AM-1/Landsat-7/SAGE-III Releases:**

- **Release B.0 (May 15, 1998):**

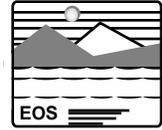
- » Limited product generation capability, but sufficient to support early mission calibration and algorithm testing/refinement
- » Full archive capability
- » Search and access, with only limited subsetting for Landsat-7
- » Some manual operations functions

**Early incremental build (Rel. B.0<sup>1</sup>) will be demonstrated in August to assure readiness with critical functions:**

- » Limited inter-DAAC product capacity
- » Additional manual operations
- » Browse data retrieval not integrated with user interface - FTP transfer

- **Release B.1 (January 15, 1999):**

- » Full production capability, including inter-DAAC products
- » Full search and order capability, with browse, subsetting, and order tracking
- » Support for reuse of ECS components by other providers

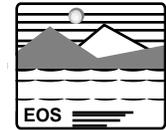


## **Pre-Release B Testbed:**

- **Installation and checkout of the Pre-Release B Testbed at EDC DAAC this week (3 weeks ahead of schedule).**
- **The GSFC DAAC SSI&T team is conducting additional, independent testing of the Testbed on behalf of ESDIS, to provide a high degree of confidence in the stability and functionality of the Testbed before it is officially turned over to the Instrument Teams and DAACs for SSI&T.**

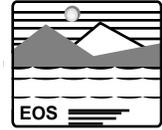
## **Release B Status:**

- **Infrastructure Build: Complete**
- **External Interfaces Build: Complete**



## Release B Status (cont.):

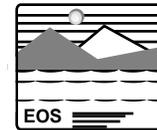
- **Release B SCF Toolkit:** ECS delivered the Science Data Production Toolkit Version 5.2 and HDF-EOS Version 2.0 on schedule (4/30/97). The new Toolkit includes DEM access, as well as several other tools and new and changed capabilities requested by the Instrument Teams
- In response to requests from the EDC DAAC, B.0 manual workarounds for Landsat Billing & Accounting and ASTER on-demand processing will be replaced with:
  - interface to the existing EDC billing and accounting system (“DORRAN”)
  - incorporation of DPR into JEST Client, with accompanying changes to PDPS to reduce manual steps.
- ESDT Development continues on or ahead of schedule (178 of 418 Descriptor files completed; 129 of 418 DLLS completed)
- Implementation of new Software CM approach underway (merging separate Clear Case “branches” into one Main branch). Some improvements seen already.



## **Release B Status (cont.):**

### **B.0<sup>1</sup>:**

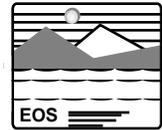
- Demonstration of Release Critical-2 level of capabilities (using ASTER, MOPITT, and MISR provided PGEs and input data) to Instrument Team and DAAC Reps scheduled for May 29, 1997. Demonstration to ESDIS Project successfully completed May 14, 1997.
- Development of final B.0<sup>1</sup> iteration (Release Critical 9, known as “RCC”-Contingency Iteration) is underway. ESDIS is actively participating in the leadership of this integration activity.



- **Release B Status (cont.):**
- **Major area of concern: Potential impact of redefined (greatly expanded) August demo on ability to meet B.0 and B.1 delivery schedules:** The August B.0<sup>1</sup> demo was planned as an internal demo, to provide motivation for ECS to focus on the most critical functionality in developing, integrating and testing B.0 requirements. Based on recommendations from the 4/28-30 EOSDIS Review Group, the demo is being re-defined as a “Go/No Go” decision point, and the scope has been dramatically expanded to include end-to-end system performance criteria. Initial assessment is that this will impact the development and integration team activities, as well as Science Office and System Test.

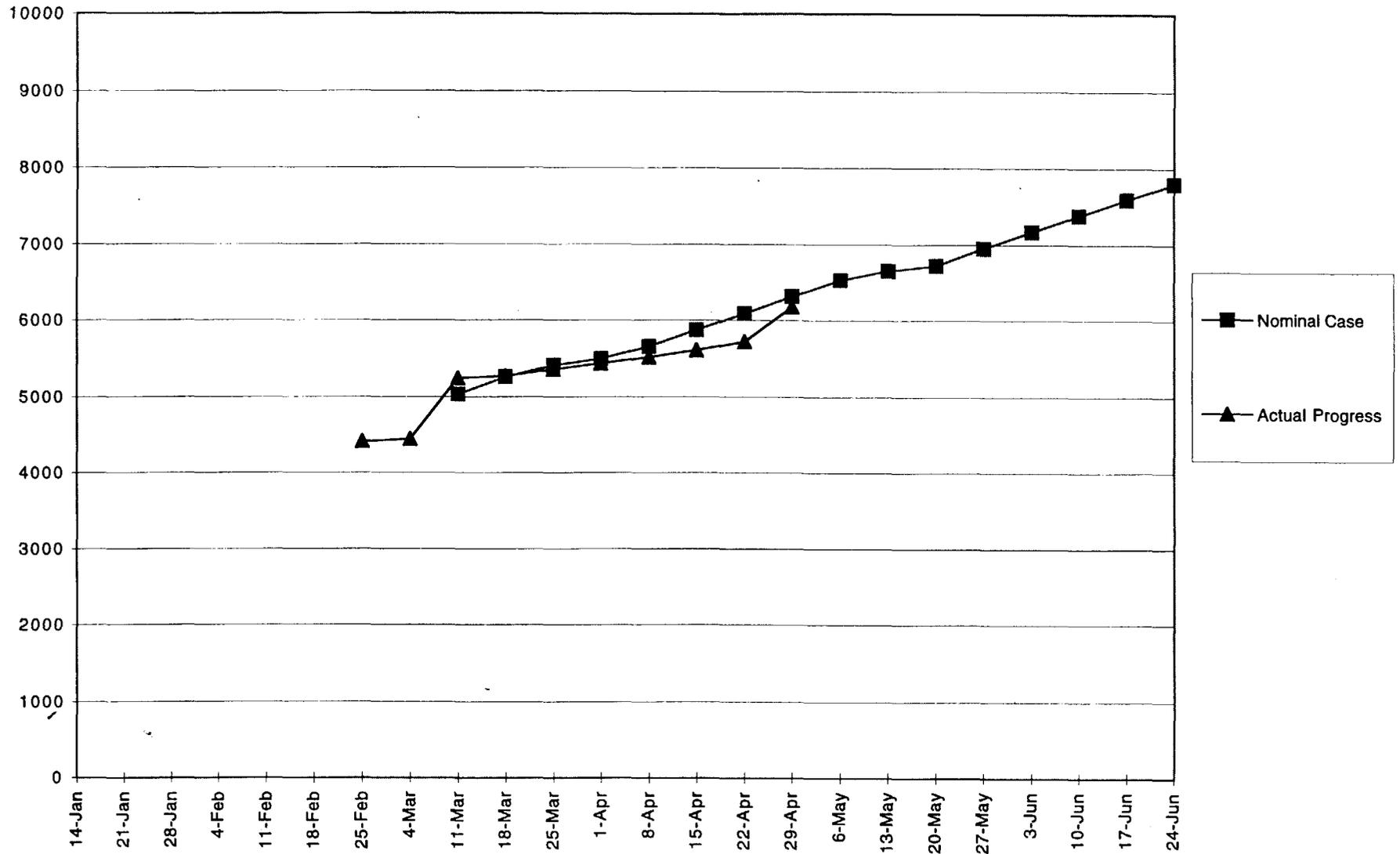
### **Action:**

- Joint ESDIS/ECS strategy planning team formed to develop high level strategy and plan that will meet objectives while attempting to minimize impact
- Assessment of likely impact will be defined and provided to ESDIS Project and Center Management

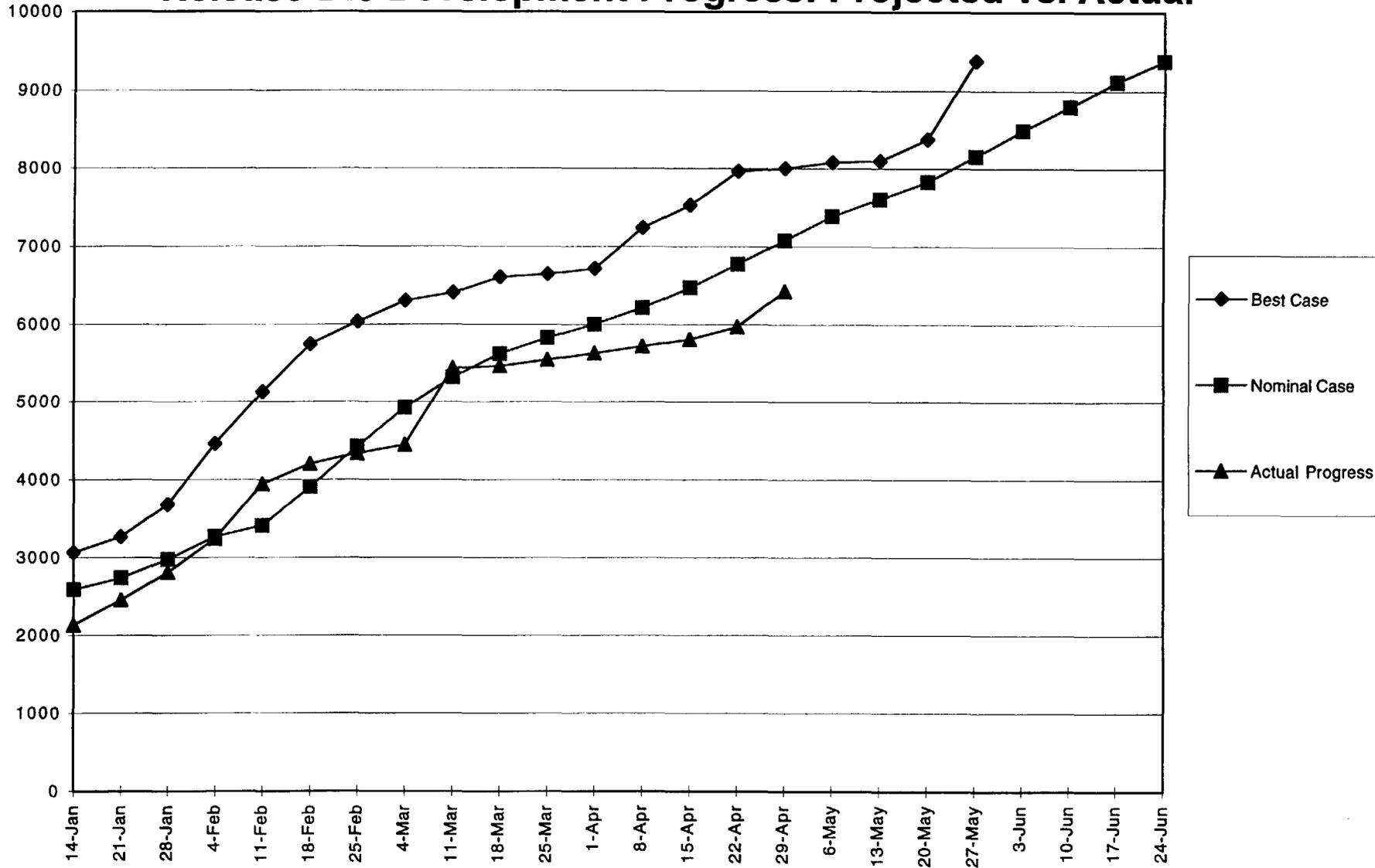


- Initialize system with configuration science software, data definitions, and production parameters (using MISR)
- Ingest all instrument Level 0 or equivalent source data (ASTER Levels 1A and 1B, Landsat-7 Level 0R, MOPITT Level 0, and ancillary data)
- Catalog data such that they can be located
  - MOPITT and ASTER source data and products are cataloged, searched and retrieved
- Run PGEs to support pre-launch and post-launch testing
  - MOPITT Level 1 and ASTER Level 2 PGEs executed in Demo
- Support data retrieval by Instrument Team (IT) users
  - MOPITT/ASTER product data are pushed to simulated SCF, based on subscriptions
- Provide production planning and processing
  - All PGE executions in Demo are implemented through Planning (PLS) and Data Processing (DPS), with executions triggered by data arrivals

# B.0' Development Progress: Projected vs. Actual

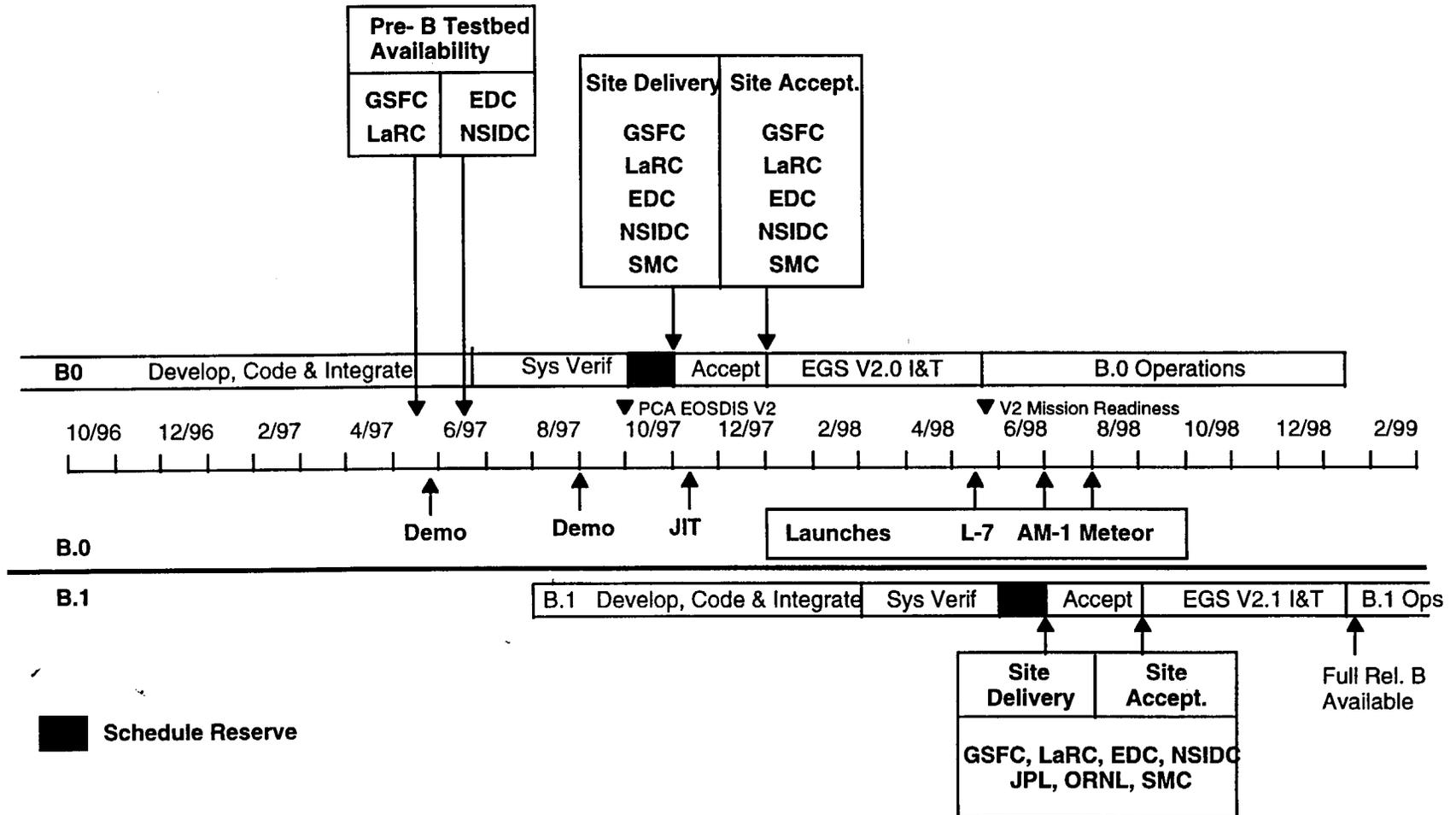
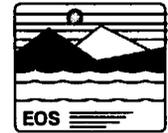


# Release B.0 Development Progress: Projected vs. Actual

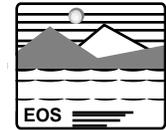


# EOSDIS

## RELEASE B KEY MILESTONES

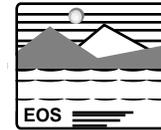


JIT= Just-in-time delivery of JEST Client and associated Data Management functions



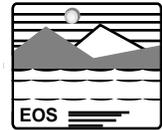
## **Version 2 Science Software Integration and Test into B.0**

- Jan 15, 1998 - Phase I SSIT
  - Launch critical PGEs through Launch + 6 M
  - PGEs required for cal/val, early science (Kaufman memo)
- Mar 16-25, 1998 - AM-1 End-to-End Testing
  - Baseline system ready for launch
- Mar 26 and on - Phase II SSIT
  - Integrated and tested PGEs inserted (before launch and ongoing)



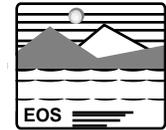
- **Funds have been allocated and held to support AM-1, Landsat-7 and SAGE-III Emergency Back-up Plans**
- **ASTER**
  - » **Received joint proposal from JPL ASTER team and EDC DAAC - May 8, 1997**
- **CERES**
  - » **Received “letter proposal” from CERES team and LaRC DAAC to augment the LaRC TRMM Information System (LaTIS) - April 21, 1997**
- **MISR**
  - » **Received joint proposal from JPL and LaRC DAAC - May 9, 1997**
- **MODIS**
  - » **Revised proposal in preparation**
- **MOPITT**
  - » **Proposal in preparation for formal submission (no change expected from back-up plan submission of January 1997)**
- **SAGE III - Plan approved (no change from back-up plan submission of January 1997)**

## AM-1 Era Alternative Architecture Trade Study Summary



- **Evaluate alternative AM-1 Era EOSDIS architectures as a result of ESSAAC Report**
- **Approach**
  - **Adopted PM Era Team evaluation methodology and identified risk for migration to PM Era architecture**
  - **Five alternatives identified ranging from continuing with baseline architecture to implementing a total PI-Mode architecture**
  - **Surveyed all AM-1 Era Instrument Teams (ITs) to determine interest in supporting architectures that diverge from the baseline**

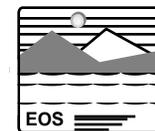
## AM-1 Era Alternative Architecture Trade Study Summary



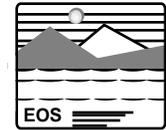
- **Status**

- **SAGE III only AM-1 Era IT with interest in investigating non-baseline architecture solution (i.e., IT assumes responsibility to perform higher level processing with archival and distribution remaining and EOSDIS responsibility)**
- **Presented results to EOSDIS Review Group April 28, 1997**
  - » **recommendation that current architecture, although not without technical or schedule risk, is the most credible solution for the AM-1 Era**
  - » **continue to evaluate potential for SAGE III hybrid architecture**
- **EOSDIS Project is working with SAGE III and MTPE to examine transition to a hybrid approach**

**EOSDIS**

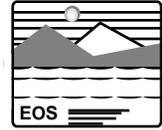


# Back-up Charts



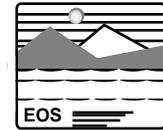
- **Infrastructure and systems management development (e.g., fault/error detection, event logging, distributed object services)**
- **External interfaces (EDOS, Landsat-7, ASTER DAR and Ingest)**
- **Automated, on-the-fly ESDT insertion**
- **AM-1 and Sage III science software integration and test**
- **Archive and retrieval of all AM-1, Sage III and Landsat 7 0R products**
- **Limited production capacity (up to 4,000 PGEs/day at each DAAC)**
- **Release B production rules**
- **Inter-DAAC production**
- **Limited subsetting (Landsat 7 scene-based, and MODIS L1B swath by parameter for production)**
- **Expedited data service**
- **Full Science QA with SCF Access**
- **V0-like search, browse and order, and ECS Advertising Services**
- **Operator-assisted user subscriptions**
- **Order-level request tracking**
- **Media and electronic data distribution**

## B.0 Capabilities (cont.)



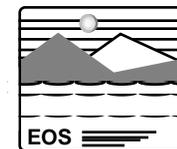
- **Ingest and preprocessing of AM-1 attitude data from EOC**
- **Landsat 7 billing and accounting support via existing EDC capability**
- **Advanced Web-based search, browse and order client**
- **Semi-automated support for generic (based on defaults) on-demand ASTER products from client**

## B.1 Capabilities



- **Inter-DAAC planning and enhanced inter-DAAC processing (remote insert)**
- **Full production capacity for planned AM-1 processing**
- **Complete subsetting capabilities for standard formatted products, and enhanced production subsetting (geographic masking and swath narrowing)**
- **Landsat 7 floating scene subsetting**
- **Fully automated on-demand processing support with non-default parameter values**
- **Enhanced client including coincident search**
- **Combined product distribution, i.e., granule packages**
- **Billing and accounting**
- **Package/Granule-level request tracking**
- **Order segmentation**
- **End-user subscriptions**
- **Enhanced archive management (e.g., media re-refresh, error monitoring)**
- **Granule versioning**
- **Document Data Server**
- **ASTER, NASDA and V0 two-way interoperability**

# Release B Support for DSWG Priorities

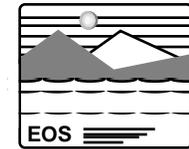


DSWG Prioritized Requirement	B.0'	B.0	B.1
1. Spacecraft and instrument operations	FOS	FOS	FOS
2. Capture data - Full capability (including ASTER DARs)	•	•	•
3. Ingest at the assigned DAACs all instrument Level 0 or equivalent data (ASTER L1A and L1B, Landsat 7 0R, and ancillary data) for which EOSDIS is the primary archive	•	•	•
4. Backup all data identified in item 3 required to produce EOS standard data products	O <sub>1</sub>	•	•
5. Catalog data such that they can be located	•	•	•
6. Support retrieval of data specified in #3			
6.1 by Instrument Teams (ITs)	•	•	•
6.2 by all *approved* users	•	•	•
6.3 Support ability to determine status of orders for data	O <sub>2</sub>	O <sub>2</sub>	•

1 - COTs FSMS support only; 2 - order-level tracking only

• = fully supported; O = supported with reduced throughput capacity

# Release B Support for DSWG Priorities (cont.)

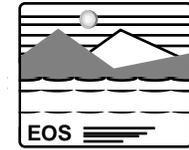


DSWG Prioritized Requirement	B.0'	B.0	B.1
7. Support DAAC operations (run PGEs) for pre- and post-launch testing (including support for QA) for the case of instruments not using data from other instruments; includes on-demand processing for ASTER	•	•	•
8. Support retrieval by ITs of test data generated in item 7	•	•	•
9. Support DAAC operations for pre- and post-launch testing using data from other instruments	•	•	•
9.1 Local DAAC data from other instruments	•	•	•
9.2 Unsubsetting data from other DAACs	O <sub>3</sub>	•	•
10. Support retrieval by Instrument Team (IT) users of test data identified in item 9	•	•	•
10.1 Electronically	•	•	•
10.2 Via media	O <sub>4</sub>	•	•
11. Support partial production planning and processing using data from a local DAAC, or a given instrument's antecedent (lower level) products from another DAAC	O <sub>5</sub>	O <sub>7</sub>	•
12. Support unsubsetting data retrieval by all users from any DAAC (with one-stop shopping capabilities of Release A)	O <sub>6</sub>	•	•

3 - at least subscription-based FTP pull; 4 - manual media distribution;  
 5 - limited set of production rules, non-optimized disk and cache management;  
 6 - FTP-based browse; 7- remote acquire only

● = fully supported; O = supported with reduced throughput capacity

# Release B Support for DSWG Priorities (cont.)



DSWG Prioritized Requirement	B.0'	B.0	B.1
13. Support partial production processing using unsubsetted data from another DAAC			
13.1 Electronically	O <sub>3</sub>	O <sub>7</sub>	•
13.2 Via media	O <sub>4</sub>	•	•
14. Support subsetted data retrieval by all users	X	O <sub>8</sub>	•
15. Support production planning and processing - full			
15.1 Run PGEs in production mode using data from local DAAC	O <sub>5</sub>	O <sub>9</sub>	•
15.2 Run PGEs in production mode using data from another DAAC	O <sub>3,5</sub>	O <sub>9</sub>	•
16. Enhance data retrieval tools			
16.1 Coincident search (using metadata only)	X	X	•
16.2 Advertising Service (for data discovery)	X	•	•
17. Support reuse of ECS components by other providers	X	X	•

8 - Landsat only; 9 - Job boxes not consolidated

• = fully supported; O = supported with reduced throughput capacity; x - not supported